UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,112	03/26/2004	David Fifield	BP 3208	8027

34399 7590 02/23/2006

GARLICK HARRISON & MARKISON LLP
P.O. BOX 160727
AUSTIN, TX 78716-0727

EXAMINER	
SAMS, MATTHEW C	
ART UNIT	**PAPER NUMBER**
2643	

DATE MAILED: 02/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/810,112	FIFIELD, DAVID	
	Examiner	Art Unit	
	Matthew C. Sams	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over He et al. (US 2004/0198420 hereafter, He) in view of Greer et al. (US 2003/0146876 hereafter, Greer).

Regarding claim 1, He teaches a communication system for providing dual band wireless communications (Fig. 1 and Page 2 [0019-0025]) comprising a first radio transceiver operable to communicate using RF signals at a first frequency, a second radio transceiver operable to communicate using RF signals at a second frequency (Page 2 [0022] and Fig. 1 [3]), and using a diversity switch (Fig. 1 [SW1 & SW2]) to connect one of the dual-band antennas with either the first or second radio transceiver. (Fig. 1 and Page 2 [0019-0025]) He teaches implementing the circuit in a laptop computer (Page 2 [0025]) using various interfaces (Page 2 [0019]), but differs from the claimed invention by not explicitly reciting a first and second "pair" of antennas, each "pair" operating at differing frequencies and implemented on a PCMCIA.

In an analogous art, Greer teaches a multiple antenna diversity for wireless local area network (WLAN) applications that includes a first pair of antenna elements, a

second pair of antenna elements, a diversity switch for connecting the transceivers with the appropriate antenna pair (Page 8 Claim 17) where the antenna elements are disposed on a PCMCIA card (Page 4 [0044]) to optimize reception and transmission for the operating frequencies being implemented on a PCMCIA card. (Page 3 [0036], Page 8 Claims 18 and 19) At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement the invention of He on a PCMCIA after modifying it to incorporate the antenna diversity and selection of Greer. One of ordinary skill in the art would have been motivated to do this since spatial diversity and polarization diversity can improve reception performance (Greer Page 2 [0017-0020]) and would become necessary with implementation on a PCMCIA card since the antennas of He would no longer be located in different locations of the laptop as hoped for in Page 2 [0025] of He.

Regarding claim 2, He in view of Greer teaches the antenna element pairs are on the same end of the PCB but on opposite sides of the PCB. (Greer Fig. 1, Fig. 8, Fig. 9, Fig. 17, Page 2 [0019], and Pages 3-4 [0037])

Regarding claim 3, He in view of Greer teaches the circuit board comprises a ground plane disposed between the individual antenna elements on opposite sides of the circuit board. (Greer Page 4 [0044] and Page 5 [0051])

Regarding claim 4, He in view of Greer teaches the first and second elements of the first pair of antenna elements are oriented to maximize polarization diversity to optimize transmission and receptions of the RF signals. (Greer Pages 2-3 [0021])

Regarding claim 5, He in view of Greer teaches the first and second antenna elements are disposed on the circuit board with an orientation to be orthogonal with respect to each other. (Greer Page 2 [0020] and Page 6 [0059])

Regarding claim 6, He in view of Greer teaches the first and second pair of antenna elements are oriented to maximize polarization diversity to optimize transmission and reception of the RF signals. (Greer Page 2 [0020], Page 4 [0042] and Page 6 [0059])

Regarding claim 7, He in view of Greer teaches the first and second antenna elements of the second pair of antenna elements are disposed on the circuit board with an orientation that is orthogonal to each other. (Greer Page 8 Claim 14 and Claim 17)

Regarding claim 8, He in view of Greer teaches the first pair of antenna elements can operate at 2.4 GHz. (He Fig. 1 and Greer Page 2 [0014-0015])

Regarding claim 9, He in view of Greer teaches the second pair of antenna elements can operate at 5 GHz. (He Fig. 1 and Greer Page 2 [0014-0015])

Regarding claim 10, He in view of Greer teaches the circuit board contains the first and second transceiver, the diversity switch, the first and second pair of antennas, all of which are implemented in a PCMCIA module. (He Page 2 [0019] and Greer Page 3 [0036] and Page 4 [0044-0046])

Regarding claim 11, the limitations of claim 11 are rejected as being the same reason stated above in claim 1.

Regarding claim 12, the limitations of claim 12 are rejected as being the same reason stated above in claim 2.

Regarding claim 13, the limitations of claim 13 are rejected as being the same reason stated above in claim 3.

Regarding claim 14, the limitations of claim 14 are rejected as being the same reason stated above in claim 4.

Regarding claim 15, the limitations of claim 15 are rejected as being the same reason stated above in claim 5.

Regarding claim 16, the limitations of claim 16 are rejected as being the same reason stated above in claim 6.

Regarding claim 17, the limitations of claim 17 are rejected as being the same reason stated above in claim 7.

Regarding claim 18, the limitations of claim 18 are rejected as being the same reason stated above in claim 8.

Regarding claim 19, the limitations of claim 19 are rejected as being the same reason stated above in claim 9.

Regarding claim 20, the limitations of claim 20 are rejected as being the same reason stated above in claim 10.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US-6,031,503 to Preiss, II et al. regarding a polarization diverse antenna for portable communication devices

- US-6,417,809 to Kadambi et al. regarding a compact dual diversity antenna for RF data and wireless communication devices

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Sams whose telephone number is (571)272-8099. The examiner can normally be reached on M-F 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571)272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MCS
2/9/2006

LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER